STATE OF CALIFORNIA
ENERGY RESOURCES CONSERVATION
AND DEVELOPMENT COMMISSION

Implementation of Renewables Portfolio Standard Legislation (Public Utilities Code Sections 381, 383.5, 399.11 through 399.15, and 445; [SB 1038], [SB 1078])	))))	**Docket No. 03-RPS-1078 RPS Proceeding**
		and
Implementation of Renewables Investment Plan Legislation (Public Utilities Code sections 381, 383.5, and 445 [SB 1038])	))))	**Docket No. 02-REN-1038 Renewable Energy Program**

COMMENTS OF THE CALIFORNIA WIND ENERGY ASSOCIATION ON "CALIFORNIA RPS INTEGRATION COST ANALYSIS – PHASE I: ONE-YEAR ANALYSIS OF EXISTING RESOURCES"

The California Wind Energy Association ("CalWEA") is pleased to comment on the "California RPS Integration Cost Analysis – Phase I: One-Year Analysis of Existing Resources" ("Report"), a consultant report to the CEC (December 2003; CEC Report No. 500-03-108C). CalWEA has actively participated in these studies from the beginning, most recently attending the February 20, 2004, Renewables Committee Workshop.

We incorporate by reference our October 24, 2003, written comments on the October 9 draft report. In these additional comments, CalWEA:

(a) offers its view regarding how these Phase I results (and the results of subsequent phases) should relate to the RPS bidding and "least-cost, best-fit" (LCBF) bid evaluation process. In so doing, we respond to many of the workshop questions posed by the Renewables Committee in Attachment A to the Workshop Notice and make suggestions for Phases II and III;

(b) comments on the presentation made by Southern California Edison at the February 20 workshop; and

(c) urges the Committee and the Commission to adopt the Phase I report as-is, along with recommendations to the CPUC for how the Phase I findings and results of subsequent phases should be applied to the bidding and LCBF bid evaluation process.

I. THE COMMISSION SHOULD ADOPT THE PHASE I REPORT AND PROVIDE THE CPUC WITH RECOMMENDATIONS FOR ITS USE IN THE PROCUREMENT PROCESS

The Commission posed six questions, which we will address together -- first, as applied to the integration cost analyses and, second, as applied to the capacity credit analysis. **Question** 1 asks whether there are any specific problems with the timing of the three-phased approach, and the use of the Phase I results in the procurement process, and whether there is a way to timely resolve the problems. **Question 2** asks what changes should be made in the methodology to ensure that it can be used fairly in the procurement process, taking into account maintenance, forced outages, and "contract" (which we interpret to mean contract terms). **Question 3** asks whether the aggregated data sets that were used in Phase 1 pose any problems. **Question 4** asks for comments on the assumptions that were made regarding availability, maintenance, and scheduling instructions in evaluating the baseline ELCC. **Question 5** asks how often the calculations should be adjusted. **Question 6** asks what the specific issues are with respect to adoption of these results.

A. Integration Cost Analyses

The integration cost studies, which analyzed the regulation and load-following costs of all renewable technologies, were directed by a nationally recognized expert and were subject to extensive discussion and review. While the authors will conduct more robust studies of regulation and load-following costs in Phases II and III, which will look at significantly increased penetration levels among other issues, the study authors conclude that:

- The regulation costs of existing renewables are very small – "at best, at the edge of the error range." The report authors "clearly say that the [regulation] impacts of the individual resources are not significantly larger than what is shown" and that the results "are sufficiently robust so that little impact should be expected if reasonable amounts of additional renewable resources are added to the system." (Report, pp. xii and xiii.) The largest of the regulation impacts is less than 0.05 cents/kWh.

- The impact of renewables on load-following costs is not significant. The results "are sufficiently robust so that little impact should be expected if reasonable amounts of additional renewable resources are added to the system." (Report, p. xiv.)

In answer to SCE's and PG&E's criticisms, the study authors clearly explained why the results of these studies differ (or, in fact, do not differ) from those of others. Given the insignificant cost results, and the authors' confidence that these costs will not change markedly with the addition of a reasonable amount of renewables capacity, there is no problem with the timing of the three-phased approach, or the use of the Phase I results in the procurement process.

As the Phase I study results are clearly credible, the Commission should adopt them and recommend them to the CPUC for use in any bid evaluation processes that occur before the completion of later phases. The Commission should note, however, that the study results show that the integration costs are too small to affect the selection of bids, and therefore that there is no practical need to apply bid adders for these costs, unless and until such time as the Phase II and III and any later studies indicate that integration costs could be significant enough to affect the outcome of a bidding competition.

B. Capacity Credit Analyses

The capacity value study was also directed by a nationally recognized expert and subject to extensive discussion and review. The study authors addressed concerns raised by SCE, PG&E and others, and, with one possible exception (the solar thermal results, which the authors are reviewing), stand by their findings.[1]

The Effective Load Carrying Capability (ELCC) analysis – a methodology that no participant has taken issue with (SCE's consultant Dr. Ed Kahn agreed it is a "standard method" for evaluating capacity value) – clearly demonstrates that wind and other renewable energy projects increase system reliability and provide capacity value proportionate to their performance during high-risk hours. This principle, rather than any particular result, is the most important aspect of the study.

At the workshop, Dr. Kahn argued that 20 hours constitute the high-risk loss-of-load-probability (LOLP) hours in 2002, rather than the 50 hours he claimed were used in the Report's analysis, and that this difference explains the difference between SCE's result for wind (13% capacity credit) and the Report's result for wind (22-26% capacity credit). In practice, however, this difference in the number of high-risk LOLP hours would be irrelevant, for these reasons:

a. The highest LOLP hours change from year to year, and are only known in retrospect. Even if there were only 20 high-risk LOLP hours in 2002, the particular LOLP hours and the number of LOLP hours will vary from year to year.

b. The LOLP hours (number and particular hours) could be dramatically affected by policy. Consider, for example, real-time pricing, which would spread the LOLP risk over many more hours, or even maintenance scheduling requirements that ensure that maintenance is staggered.

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[1] CalWEA will defer to the Report's analyst team to respond to the comments that SCE presented at the February 20 workshop. We note, however, that SCE's detailed objections to the capacity credit analysis were unveiled at the last possible moment, even though most of the methodological "deficiencies" that SCE cited (e.g., looking at risk over the entire California system vs. SCE's system only, and the wind power statistical distributions that were used) have been public for many months.

c. While using 20 or 50 hours on a retroactive basis might be useful for an ELCC analysis for a particular year, neither is practical for the purpose of contracting. Neither sellers (renewable or non-renewable, firm or as-available) nor buyers would have an interest in limiting the award of capacity payments to only 20, or even 50, LOLP hours that are determined after-the-fact. The risk of not performing during those hours due to a forced outage would simply be too high and would therefore drive financing costs up, raising the price of power to undesirable levels.

d. Regardless of the LOLP hours, the utility still has an interest in generators operating much of the time (if they didn't, there would be many more LOLP hours).

Again, the important principle that should be built into the LCBF process – and carried out in the contract terms – is that all resources provide capacity value, and deserve capacity credit, to the extent that they perform during high-risk hours. Because of the reasons stated above, those hours should be broadly defined – i.e., they should capture all of the likely high-risk hours over a number of years, though they could be weighted to put more value on the top 20 to 50 hours.

As we see it, there are two ways to apply this principle in the LCBF bid evaluation process. One involves the use of the ELCC results in the bid evaluation process, the other does not. Each could work, but the latter has important advantages.

1. Applying the ELCC Results in the LCBF Process

If the ELCC results were applied to the LCBF process, we would envision the approach as follows.[2]

a. The Report's capacity credit analysts would determine in advance (with public participation) the value of capacity and the appropriate allocation of capacity value over all hours during the year, with the greatest value allocated to the highest-risk hours (which we would expect to be significantly more than 50), no value allocated to the lowest-risk hours, and some value allocated to the hours in between.[3] The capacity value and allocation would be incorporated into the analysts' ELCC model.

b. Each bidder would provide his resource profile data, technology type, and perhaps other data to the analysts.[4] The Report analysts would use the

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[2] We would not advise that the ELCC *methodology* be incorporated into the utilities' LCBF analyses because it would be less transparent and require policing to ensure that the utilities do not introduce bias.

[3] This value and allocation would, of course, have to be approved by the CPUC.

[4] If integration studies have been performed for the resource area that is bid, profile data may not need to be submitted by the bidder, but data would be needed for projects in new resource areas. In addition, bidders whose sites are of higher resource quality than the general area would want credit for that.

ELCC model to determine the bid-specific capacity credit, along with the value of that capacity credit.

c. Bidders would submit a single "all-in" price per kWh (consistent with the CPUC's June 2003 decision). For purposes of the LCBF evaluation process, the bid would be adjusted by the project's capacity credit value as determined by the Report analysts (as well as any integration and transmission cost adders).

d. Winning bidders would either be paid the all-in price that they bid, or would receive separate capacity and energy payments that sum to the all-in bid price.

e. The CPUC would need to ensure that the utilities structure contract provisions relating to capacity payments consistent with the ELCC studies as reflected in this approach (e.g., disallow onerous capacity demonstration tests).

It is important to point out that the CPUC's initial rules on the LCBF process do not explain how the all-in bid price will be separated into capacity and energy components in the LCBF process, how the capacity component will be valued, or how contract capacity payments will be made. The above method supplies the answers, but it would be critically important also for the CPUC to establish more detailed LCBF evaluation rules and contract terms that guard against erroneous results, or worse still, gaming. Gaming could occur for example, if bidders (particularly those with projects that are not located in developed resource areas) realize that they could gain an advantage if they submit resource profile data that is modified to show improved performance during high-risk LOLP hours, while declining capacity payments (so as not to have to perform consistent with the submitted resource profile). As another example, a bidder might submit a resource profile that shows less production during the identified LOLP hours than it actually expects, and arrange high capacity payments. The bid would be evaluated as if it did not get as much revenue from capacity payments as it actually would, which would increase average payments above what was assumed in the bid comparison.

The implementation of the LCBF process or faulty contract terms could also lead to projects that are erroneously determined to be "least-cost." For example, if the utilities use the ELCC methodology, they could manipulate a bidder's resource profile so as to provide more capacity credit than is deserved, make overly generous capacity payments, or make capacity payments that are at odds with the identified high-risk LOLP hours.

The approach outlined above, along with certain contract and payment provisions, might be able to prevent such gaming and erroneous LCBF results. For example: (1) contract provisions could hold projects to the resource profile that was bid, though there is a very fine line between holding the project accountable for its reasonable expectations and unduly penalizing the project for failing to meet those expectations; (2) contract provisions could ensure that the total price does not exceed the total price as it was

evaluated (which evaluation assumed a certain performance profile); (3) capacity payments could be spread and weighted according to the identified high-risk LOLP hours; and (4) capacity payments could be defined for all bidders based on the value of capacity.[5]

Even if the potential for gaming and false LCBF results are remedied, however, this approach has important disadvantages. First, some of the remedies will be difficult to structure or police. Second, capacity credit values for a number of technologies (such as landfill gas and modern wind technologies), resource areas (such as the Salton Sea geothermal area, the Solano County wind resource area, and all out-of-state resources), and products (such as "firmed" intermittent resource products) were not determined in Phase I. Though it might be possible to analyze every bidder's technology, resource and product in Phases II and III and during each round of bidding, (a) the first round of bidding may occur before the capability is developed, (b) such a process could be difficult and time-consuming, possibly delaying the RFP process, and (c) such a process could be controversial. That a solar thermal developer and others have taken issue with the Phase I Report's capacity credit results for their technology is an example of possible controversy. The approach described next avoids all of these potential pitfalls.

2. A Simpler Approach Using the Principle of the ELCC Studies

A simpler and more transparent approach that creates the appropriate economic incentives – both in valuing capacity and encouraging performance during high-risk hours would work as follows.

a. As with the first approach, the Report's capacity credit analysts would determine in advance (with public participation) the value of capacity and the appropriate allocation of capacity value. They would then translate that value and allocation into fixed capacity payments for each hour of delivery.[6]

b. Bidders would bid an energy price, knowing that they will also receive the fixed capacity payments if and when they deliver during the identified high-risk LOLP hours. Bidders who are confident that they will perform during the identified LOLP hours, or a significant fraction of them, will be able to reduce their energy bids accordingly.

c. Bids would not be adjusted for their capacity value, only for other indirect costs, and would be selected on that basis.

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[5] In addition (and in answer to the Committee's Question 4), as indicated in the Report, all contracts should contain clauses that ensure that the scheduled maintenance of all facilities will be performed on a staggered basis.

[6] Alternatively, the capacity payments could be folded into the energy price, to create a time-adjusted energy payment.

d. Selected bidders would be paid the energy price that they bid on all deliveries, plus fixed capacity payments when they deliver during the identified LOLP hours.

e. As with the first approach, the CPUC would need to ensure that the utilities structure contract provisions relating to capacity payments consistent with the ELCC studies as reflected in this approach.

The purchasing utility should be indifferent to this approach because it can purchase capacity at the same cost as the bidder reflects in his bid. For example: if Bidder A knows he produces off-peak, he will not reduce his bid price by any expected capacity payments, while Bidder B, who always produces on-peak will be able to take full advantage of the capacity payment. So, hypothetically, if Bidder A bids 3 cents/kWh and does not offset his bid by the 1 cent/kWh capacity payment, and Bidder B bids 5 cents/kWh after offsetting his bid by the full 1 cent/kWh capacity payment, the utility is better off selecting Bidder A and purchasing capacity separately at 1 cent/kWh for a total cost of 4 cents/kWh.[7]

Though there would be no project-specific ELCC analysis required in this process, the principle of the ELCC studies has been achieved by effectively evaluating bids and paying winning bidders based on their production during high-risk hours (which puts the project at risk for performance during high-risk hours).[8] This process is simpler than the first approach and is not game-able because bidders bid only their energy price and quantity, and are paid based on their performance.

We would expect all bidders and technologies to be comfortable with this construct, which does not use the study results in the bid evaluation process, but which depends instead on the technology's performance during the top LOLP hours.[9]

We urge the Commission to recommend to the CPUC that they incorporate the capacity credit studies by adopting this type of simple approach to bidding and bid evaluation. Note, however, that this approach would require the CPUC to reconsider its decision requiring bidders to bid on an all-in basis.

II. IMPLICATIONS FOR PHASES II & III

If the Commission agrees with either capacity credit approach outlined above, the next phases in the capacity credit studies should, in addition to what is already planned:

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[7] This example assumes that the utility needs capacity.

[8] The completed ELCC studies would still be useful: they could be used by the utilities in their planning efforts to gauge the capacity deliveries they could expect from winning bidders.

[9] We note that some of the discrepancy between the SEGs' excellent performance during the peak period as defined by the power purchase contract and the ELCC study results may be due to the difference between high LOLP hours and the peak hours as defined by the contract. Solar thermal projects are likely to be able to perform well during a defined set of high-risk LOLP hours.

(a) define the high-risk LOLP hours (possibly weighted toward the highest-risk hours), and (b) determine the value of capacity, and possibly capacity payments.

Thank you for considering our views. Please contact me if I can provide further information on any of our comments.

Respectfully submitted,

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February 27, 2004